

Appl. No. 11/630,338
Amdt. Dated January 4, 2006
Reply to Office Action of October 4, 2005

Amendments to the Claims:

This listing will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (Currently amended): ~~An~~ A helical electrodeionization device that is spirally wound to
have a helical configuration, which helical electrodeionization device comprises; comprising;

an axially extending conduit generally located along a central axis of the helical
electrodeionization device;

~~an anion-exchange membrane; a cation-exchange membrane;~~

a first electrode;

at least one membrane bag formed ~~by the~~ from an anion exchange membrane and the a
cation exchange membrane;

a second electrode;

said at least one membrane bag having a concentrate flow ~~channel;~~ channel and a dilute
flow channel located adjacent said at least one membrane bag, said at least one membrane bag
and said diluent flow channel being wound about said axially extending conduit and said dilute
flow channel being; i) positioned between layers of said at least one wound membrane bag, ii)
filled with an ion exchange resin, iii) comprising at least two integrated support frames each of

Appl. No. 11/630,338
Amtd. Dated January 4, 2006
Reply to Office Action of October 4, 2005

which includes an array of bars that are spaced apart, and iv) made up of interphase longitudes and hollow latitudes; and including an integrated frame having an array of bars spaced apart, said frame arranged to support the dilute flow channel and allow dilute water to flow fluently therethrough; and

a housing for housing the foregoing components, ~~components.~~

wherein said at least two support frames are wound on or in said membranes and spaced apart so as to define an interphase aisle structure between adjacent pairs of the at least two support frames.

Claim 2 (Currently amended): The device of claim 1, wherein ~~the~~ a longitudinal direction of the at least two integrated support frames frame is rotationally offset from ~~the~~ an axial direction of the electrodeionization device at an angle of about zero to sixty degrees.

Claim 3 (Currently amended): The device of claim 1, wherein the array of bars include of each of said at least two support frames includes longitudinal bars that are spaced apart from one another at a distance of ~~from others of the longitudinal bars~~ between about 3 mm and 8 mm.

Claim 4 (Currently amended): The device of claim 1, wherein the array of bars include of each of said at least two support frames includes latitudinal bars that have ~~having~~ a thickness of about 0.4 mm and 2.0 mm.

Appl. No. 11/630,338
Amdt. Dated January 4, 2006
Reply to Office Action of October 4, 2005

Claim 5 (Currently amended): The device of claim 1, wherein the array of bars of each of said integrated support frames comprise ~~frame is an array of bars provided on defining~~ the adjacent anion exchange membrane and cation exchange membrane.

Claim 6 (Currently amended): The device of claim 1, wherein the bars of the at least two support frames are rectangular in cross section.

Claim 7 (Currently amended): The device of claim 1, wherein the bars of the at least two support frames are rectangular with rounded edges in cross section.

Claim 8 (Currently amended): The device of claim 1, wherein the bars of the at least two support frames are polygonal in cross section.

Claim 9 (Currently amended): The device of claim 1, wherein the bars of the at least two support frames are semi-circular in cross section.

Claim 10 (Currently amended): The device of claim 1, wherein the bars of the at least two support frames are triangular in cross section.

Appl. No. 11/630,338
Amdt. Dated January 4, 2006
Reply to Office Action of October 4, 2005

Claim 11 (Currently amended): The device of claim 1, wherein the bars of the at least two support frames are substantially in a parallel relationship with each other.

Claim 12 (Canceled)

Claim 13 (Canceled)

Claim 14 (Currently amended): The device of claim 13, 1, wherein each of said integrated support frames ~~frame~~ is wound about said axially extending conduit together with said at least one membrane bag.

Claim 15 (Currently amended): The device of claim 12, 1, wherein said second electrode is a metal member extending about ~~the~~ an outside portion of said at least one membrane bag.

Claim 16 (Currently amended): The device of claim 12, 1, wherein said axially extending conduit comprises ~~is~~ a pipe having slotted apertures arranged to communicate fluid with said concentrate flow channel.

Claim 17 (Currently amended): The device of claim 12, 1, wherein said axially extending conduit includes said first electrode.

Appl. No. 11/630,338
Amdt. Dated January 4, 2006
Reply to Office Action of October 4, 2005

Claim 18 (New): The device of claim 1, wherein each of said at least two support frames are arranged to provide spatial and structural support to the anion and cation membranes which define the diluent flow channel.